

## **ASD Weekly Highlights for the Week Ending 10-Mar-2006**

### **Operations**

- Nick Luciano started this week as a Chief Operator, He joins us from RHIC
- Supporting the PPS, TPPS, TPS Certification
- Preparing for the ARR
  - Closing Action Items 86 open 49 closed or submitted for closure
  - Planning a test of the He gas Release Test
  - Writing the Operational Envelope
  - Integrating Operations Procedures with XFD
- Preparing a Post CD-4 shutdown work plan
- Leading ongoing discussions with the RATS and Business people on Location/Tracking/Accounting of Spares to be sure that we get our work done and hopefully comply with DOE regulations on equipment tracking.

### **Accelerator Physics**

- Work continues to model the H0 and H- waste beams through the chicane magnets and the injection dump septum magnet. With the new chicane magnet settings needed for nominal injection into the ring the H0 beam travels very close to the beam right side of the vacuum chamber inside the injection dump septum magnet. Beam loss monitor readings and beam pipe activation measurements are consistent with beam spill at this location. We are working to determine a new injection tune that will produce both good injection into the ring and good transmission of beam to the injection beam dump.

### **RF Systems**

#### **Ring RF**

- System is back up and running. We turned the system down to allow a cable pull through the RF area.
- We are continuing to work on understand the Low Level RF system capabilities.

#### **LINAC RF**

- We completed the upgrade of 53 klystron filament power supplies consisting of installing new more reliable controller chips in each FPS. This should address a problem with failures after turn on.
- All of the cables for the HOM couplers and field probes were re-measured for losses, corrections were entered in the operating parameters and the data base was updated.
- Pipefitters began work on the RFTF equipment to allow us to reconfigure for dual klystron high power operation.
- One RF technician is still working full time performing sensor calibrations for the Target Division.

## **Ion Source**

- We have generated a prioritized spares list. So far we have used the test stand as a primary source of spares, which has occasionally shut down the test facility. This has become highly undesirable due to the importance of the tests required to assess and meet requirements for 1.4 MW operations, as well as for the SNS Power Upgrade. Therefore we have prioritized our spares with likelihood of failure, the consequence of the failure, and the mean time to recover, which now includes the FrontEnd and the Test Stand. This has significantly increased the priority of having spare high voltage supplies.

## **Instrumentation and Controls**

- The major accomplishment for the week was completion of the certification of the PPS for Phase 4 – beam to Target. This significant milestone was accomplished with the help of Operations and all the engineering groups.
- Last week's recovery problems related to a scheduled power outage have resulted in a concerted effort to develop a "power chain" report from the SNS Technical Database. To acquire the necessary data a "touch-the-equipment" survey was undertaken to record every IOC and Network Switch associated with the ACCL VLAN Network and its power chain from the rack back to the panel box. The DTL, CCL, SCL, RING, HEBT, and the RTBT have been completed and the Front-End is 90% complete. The CHL, CUB, and Target Building remain to complete. A Power Chain report has been added to the Controls Reports Online system. One can get the power chain for a device in either direction (either to or from the power source). Each device name in the report has a link that provides information about this device from Oracle. This report can be found from the Controls website following the links: Control Systems website> Software> Reports Online (link on the right)> select Power Chain from the drop-down list on the Report Selection page.
- Work continued on the cleanup and consolidation of archive data, leading to a new and hopefully more efficient archiving architecture. The disc controller firmware was updated which addressed some reliability issues. It is anticipated that all data will be rearranged so that the new arrangement can begin testing in about ten days. (The bottleneck is getting data off the 'archive1' computer while engines are still running.)
- "Soft" IOCs are being upgraded to the current version of EPICS (v 3.14.8.2). It is hoped that this new version will fix the remaining connection problems. The HPRF soft IOCs are also being moved to a new RF soft IOC server. The Operating System was upgraded on all four Physics Servers as was the CF server.
- A new cryo sequence and database is being developed to allow two sets of PID loop parameters for the heater control sequence, one for quick changes when the error is large and one for finer control when the error is small.

- Work continues on Target systems I&C. One ASD electronics technician has been returned to his home group. The Target version of the ETS timing card is being tested and will be reviewed soon; interrupts are working. Checkout of target utilities controls continues. Final calibrations are being performed on instruments for which there is no calibration data. Checkout/verification is nearly complete. Target MPS input logic is being revised to improve availability and a target MPS trip bypass/alarm status indication has been implemented. Target screens needed in the CCR are being updated once a day when a lot of changes are being made. As-built drawings for the hot cell control room are complete and modifications to the hot cell high pressure control are in process. Controls for the 50-ton crane are complete.
- The major installation activity continues to be with RTBT beam instrumentation. The harp is installed and in its vessel; cable terminations at the junction box were completed this week. The Beam Size Monitor electronics chassis is being built and should be complete by next week. AllBPMs except those around DH13 have been connected. Tunnel terminations of the RTBT BCMs are complete and the associated NADs are being built up. All tunnel long haul cables are complete for the loss monitor system up to RTBT Q26. HEBT Wire Scanner 16 is repaired and ready for installation; RTBT WS 24 1nd 25 will be installed next week.
- Other diagnostic work includes building, testing and installation of timing system fan-outs; removal for repair of MEBT harps; ordering of parts for the Bunch Shape Monitor and preparing cable pulls for the Ring electron detectors. The laser was also moved this week from the HEBT laser room to the tunnel and set up for remote control.
- Not directly related, but as part of the SNS contribution to the EPICS Collaboration, discussions continued with Cosylab (Slovenia) and DESY about a new applications programming interface (API) and with Argonne National Lab and others about the design of a planned EPICS Version 4 – a major redesign.

## **SRF Facility**

### **Project Upgrade**

1. SNS PUP has been informed as part of the OMB-300 preparation process that the project funding profile is as follows:
2. FY08: \$25M FY09: \$50M FY10: \$50M FY11: \$25M FY12: \$10M
3. Up grade related R & D will also receive \$3M in FY06 and \$3M in FY07 through the SNS Operating Budget.
4. Replanning is in process to finalize the SNS PUP CDR.

## **Survey and Alignment**

- **RTBT RAD HARD QUADS**
  - Problems associated with the RTBT RAD Hard Quad / Harp Test Stand has resulted in a significant amount of rework to warrant that the validity of the alignment. Essentially, the test stand did not provide the necessary level of stability required. Modifications to the test stand were performed to make it more robust. Those efforts were only partially successful. A magnet positioned on the rails for mapping purposes was still subject to unwanted changes.
  - The final alignment strategy employed was as follows:
    - Align the test stand rails to required specifications.
    - Map the final aligned rail positions prior to setting a magnet on the stand.
    - Position a magnet to its predetermined location on the test stand.
    - Allow the magnet a period of time to “settle out”.
    - Re-map the position of the test stand rails with the load applied noting the differences recorded from the rails without a load applied.
    - Align the magnets to the ideal position upon the rails utilizing the differences recorded.
- **DH13**
  - Assisted in the magnetic mapping of DH13 Dipole by aligning the measuring coil to a number of positions.
  - Realigned DH13 after completion of measuring process as well as realigning the adjacent quadrupole magnets on either side.
- **Target/ Instruments**
  - The BL3 flight tubes (2,3,4) were adjusted to elevation in the hut
  - A laser tracker was moved to BL2, where chopper # 3 was aligned. A reference file was built for the BL3 “mock-up.”
  - An elevation survey was begun for the granite tiles in the BL4A cave. Adjacent tiles were found to have steps of up to 0.5 mm. This survey is scheduled to be continued in the week of March 20.
  - The large shielding base plate was set on BL 17, and the downstream “XY” line monuments were set for drilling. A medium-precision network was constructed around BLs 17 and 18, using a total station
- **Misc.**

- In conjunction with ASD Physics, continued Beam Line Trajectory Modeling of the Ring Injection Area.

## **Cryo Systems**

### **Magnets**

- RTBT DH13 was successfully mapped.

## **Mechanical Systems**

### **Shielding progress.**

#### **Ring Systems Installation Activities**

- The Ring PSSO fire damper control cable pull was completed.
- The RTBT Bend Magnet DH13 mapping was completed and DH13 reinstalled and realigned.
- The RTBT Magnets QV13 and QH14 were reinstalled and realigned.
- The RTBT Target Quad magnets buss cooling line insulator installation continued.
- The RTBT Target Quad / HARP air and He lines installation continued.
- The RTBT Target Quad magnet Q30 was installed and the Q30 to HARP Vessel vacuum joint successfully made.
- The RTBT Target Quad magnet Q30 was removed for survey and re-alignment.
- The RTBT HARP assembly was installed and the HARP to Vessel joint successfully made.
- The RTBT Target Quad BLM track was installed in the “T” section.
- The RTBT spare vacuum valves and Kicker bake-out blankets were sent removed to RATS II for storage.
- The RTBT Target Quad test stand rails were re-aligned and welded in position.

#### **Ring Water Systems Installation**

- The HEBT LDRD Laser closed loop cooling cart was installed and placed in operation.
- The RTBT Magnet DH13 cooling was disassembled and re-established for normal operation.
- The RTBT Collimator Closed Cooling System test and checkout continued.
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## **Electrical Systems**

### **Power Supplies**

- Replaced the fuses on RING\_Mag:PS\_DHA12 with the correct values and placed those fuses back on the spare in RATS
- Repaired extraction kicker #12, ALE power supply fault
- Tested the remaining 20 amp correctors in the RTBT
- Repaired faulty klaxons on magnet QHA2 in the ring tunnel
- Supported the PPS and TPS certification by locking and unlocking the HEBT, Ring, and RTBT power supplies numerous times
- Made noise measurements on extraction kicker tanks
- Replaced CT and installed an aluminum spacer on extraction kicker tank 13
- Ordered parts for decreasing noise on extraction kicker current transformer cables

- Repaired oil leaks on PFN tanks
- Repaired rack wiring problem on extraction kicker 12
- Re-Installation of wiring for Magnets QV13 / QH14/ DH13 / DCV13 / DCH14 and supported Magnet Mapping of DH13
- PPS / TPS Testing Support
- PPS Support for Critical Device Control (Hasps on Power Supplies / Magnet Lead Locking Devices)

## Modulators

- Completed oil processing on SCLME 15 and SCLME-12

## Installation

- Finished HARP Terminations at Junction Box in Tunnel

## AC Power

- Completed Ring AC power distribution spreadsheet for Control room information
- Project completed with PSSO subcontractors on Ring PPS exhaust fans control power installation
- Completed Electrical maintenance plan and submitted it for review
- Review AC power needs for Vacuum system with Peter Ladd

## XFD work

- Completed Rebar drawing designs
- Attended BL 15 pre-design meeting to establish guidelines and provide design support

## Other

- Teresa Toomey responded to electrical safety incident, supported safety critique
- Held group safety meeting in response to electrical safety incident
- Six offers for Research Mechanic – Electrical were made and all were accepted. Pending completion of medical testing, all should start on 4/10/06.